AMENDMENTS TO THE CLAIMS

1. (currently amended) A single-mode optical fiber suitable for a WDM (Wavelength Division Multiplexing) system, comprising:

(a) a first core region positioned in the center of cross section and having a radius r_1 from the center and a relative refractive index difference $\triangle_1$;

(b) a second core region surrounding the first core region and having a radius r_2 from the center and a relative refractive index difference $\triangle_2$;

(c) a third core region surrounding the second core region and having a radius r_3 from the center and a relative refractive index difference $\triangle_3$; and

(d) a clad region surrounding the third core region and having a radius r_4 from the center and a relative refractive index difference $\triangle_4$,

(e) wherein the radii of the regions have a relation of $r_1 < r_2 < r_3 < r_4$, and the relative refractive index differences of the regions have relations of $\triangle_1 > \triangle_2$, and $\triangle_2 < \triangle_3$;

(here, $\triangle_1(\%)=[(n_1-n_c)/n_c]\times 100$, $\triangle_2(\%)=[(n_2-n_c)/n_c]\times 100$, $\triangle_3(\%)=[(n_3-n_c)/n_c]\times 100$, n_1: a ~~reflective~~ refractive index of the first core region, n_2: a ~~reflective~~ refractive index of the second core region, n_3: a ~~reflective~~ refractive index of the third core region, n_c: a ~~reflective~~ refractive index of the clad region)

(f) wherein the optical fiber uses a wavelength region from 1460 to 1625 nm, and has a dispersion value of 0.1 to 3.0 ps/nm-km at 1460 nm, 3.0 to 5.5 ps/nm-km at 1550 nm, and 4.5 to 8.0 ps/nm-km at 1625 nm.

2. (original) The single-mode optical fiber according to claim 1,

wherein the optical fiber has a positive dispersion slope in the wavelength band for use.

3. (currently amended) The single-mode optical fiber according to claim 2,

wherein the optical fiber has a dispersion slope of 0.023 to 0.05 ps/nm^2-km^2 at 1550 nm.

4. (original) The single-mode optical fiber according to claim 3,

wherein the optical fiber has an effective section area of 35 to 50μm^2 at 1550 nm.

5. (original) The single-mode optical fiber according to claim 3,

wherein the optical fiber has an effective section area of 35 to 50μm^2 at 1460 nm.

6-11. (cancelled)

12. (original) The single-mode optical fiber according to claim 1,

i) wherein the first core region has a radius r_1=3.05±0.6μm and a relative refractive index difference $\triangle_1$(%)= 0.54±0.03%;

ii) wherein the second core region has a radius r_2=5.38±0.6μm and a refractive index difference $\triangle_2$ = -0.20±0.03%; and

iii) wherein the third core region has a radius r_3=9.96±0.6μm and a specific refractive index difference $\triangle_3$ = 0.07±0.03%.

13. (original) The single-mode optical fiber according to claim 1,

i) wherein the first core region has a radius r_1=3.05±0.6μm and a relative refractive index difference $\triangle_1$(%)= 0.55±0.03%;

ii) wherein the second core region has a radius r_2=5.75±0.6μm and a relative refractive index difference $\triangle_2$ = -0.18±0.03%; and

iii) wherein the third core region has a radius r_3=10.79±0.6μm and a relative refractive index difference $\triangle_3$ = 0.09±0.03%.

14. (original) The single-mode optical fiber according to claim 1,

i) wherein the first core region has a radius r_1=3.12±0.6μm and a relative refractive index difference $\triangle_1$(%)= 0.53±0.03%;

ii) wherein the second core region has a radius r_2=5.56±0.6μm and a relative refractive index difference $\triangle_2$ = -0.23±0.03%; and

iii) wherein the third core region has a radius r_3=9.92±0.6μm and a relative refractive index difference $\triangle_3$ = 0.10±0.03%.

15. (original) The single-mode optical fiber according to claim 1,

i) wherein the first core region has a radius r_1=3.24±0.6μm and a relative refractive index difference $\triangle_1$(%)= 0.48±0.03%;

ii) wherein the second core region has a radius r_2=5.72±0.6μm and a relative refractive index difference $\triangle_2$ = -0.17±0.03%; and

iii) wherein the third core region has a radius r_3=8.54±0.6μm and a relative refractive index difference $\triangle_3$ = 0.15±0.03%.

16. (original) The single-mode optical fiber according to claim 1,

i) wherein the first core region has a radius r_1=3.37±0.6μm and a relative refractive index difference $\triangle_1$(%)= 0.50±0.03%;

ii) wherein the second core region has a radius r_2=5.77±0.6μm and a relative refractive index difference $\triangle_2$ = -0.25±0.03%; and

iii) wherein the third core region has a radius r_3=9.35±0.6μm and a relative refractive index difference $\triangle_3$ = 0.14±0.03%.

17. (original) The single-mode optical fiber according to claim 1,

i) wherein the first core region has a radius r_1=3.18±0.6μm and a relative refractive index difference $\triangle_1$(%)= 0.51±0.03%;

ii) wherein the second core region has a radius r_2=6.18±0.6μm and a relative refractive index difference $\triangle_2$ = -0.19±0.03%; and

iii) wherein the third core region has a radius r_3=8.65±0.6μm and a relative refractive index difference $\triangle_3$ = 0.14±0.03%.

18. (currently amended) A single-mode optical fiber suitable for a WDM (Wavelength Division Multiplexing) system, comprising:

(a) a first core region positioned in the center of cross section and having a radius r_1 from the center and a relative refractive index difference $\triangle_1$;

(b) a second core region surrounding the first core region and having a radius r_2 from the center and a relative refractive index difference $\triangle_2$;

(c) a third core region surrounding the second core region and having a radius r_3 from the center and a relative refractive index difference $\triangle_3$; and

(d) a clad region surrounding the third core region and having a radius r_4 from the center and a relative refractive index difference $\triangle_4$,

(e) wherein the radii of the regions have a relation of $r_1 < r_2 < r_3 < r_4$, and the relative refractive index differences of the regions have relations of $\triangle_1 > \triangle_2$, and $\triangle_2 < \triangle_3$;

(here, $\triangle_1(\%)=[(n_1-n_c)/n_c]\times100$, $\triangle_2(\%)=[(n_2-n_c)/n_c]\times100$, $\triangle_3(\%)=[(n_3-n_c)/n_c]\times100$, n_1: a ~~reflective~~ refractive index of the first core region, n_2: a ~~reflective~~ refractive index of the second core region, n_3: a ~~reflective~~ refractive index of the third core region, n_c: a ~~reflective~~ refractive index of the clad region)

(f) wherein the optical fiber uses wavelength region from 1460 to 1625 nm, and has a dispersion value of 0.1 to 3.0 ps/nm-km at 1460 nm, 3.0 to 5.5 ps/nm-km at 1550 nm, and 4.5 to 8.0 ps/nm-km at 1625 nm;

(g) wherein a dispersion slope at 1550 nm is 0.023 to 0.05 ps/nm^2-km^2;

(h) wherein an effective section area at 1550 nm is 35 to 50μm^2.

19. (original) The single-mode optical fiber according to claim 18,

wherein the optical fiber has an effective section area of 35 to 50μm^2 at 1460 nm.

20. (original) The single-mode optical fiber according to claim 18,

herein the optical fiber has a cutoff wavelength of 1450 nm or below.

21. (original) The single-mode optical fiber according to claim 18,

wherein a zero-dispersion wavelength is located at 1460 nm or below.

22. (original) The single-mode optical fiber according to claim 18,

wherein the optical fiber has a dispersion value of 0.3 to 2.4 ps/nm-km at 1460 nm.

23. (original) The single-mode optical fiber according to claim 18,

wherein the optical fiber has a dispersion value of 3.2 to 5.2 ps/nm-km at 1550 nm.

24. (original) The single-mode optical fiber according to claim 18,

wherein the optical fiber has a dispersion value of 4.8 to 7.7 ps/nm-km at 1625 nm.

25. (original) The single-mode optical fiber according to claim 18,

wherein a bending loss is 0.5dB or less at 1625 nm under the condition of a bending radius of 30mm, 100turns.

26. (currently amended) An optical transmission line ~~in which the single-mode optical fiber defined in any of claims 1 to 18 is adopted~~ comprising at least in part the optical fiber according to claim 1.

27. (currently amended) An optical transmission system having ~~in which the optical transmission line defined in claim 26 is adopted in at least a part of~~ an optical transmission path comprising at least in part the optical transmission line according to claim 26.

28. (new) The single-mode optical fiber according to claim 4,

wherein the optical fiber has a cutoff wavelength of 1450 nm or below.

29. (new) The single-mode optical fiber according to claim 5,

wherein the optical fiber has a cutoff wavelength of 1450 nm or below.

30. (new) The single-mode optical fiber according to claim 4,

wherein a zero-dispersion wavelength is located at 1460 nm or below.

31. (new) The single-mode optical fiber according to claim 5,

wherein a zero-dispersion wavelength is located at 1460 nm or below.

32. (new) The single-mode optical fiber according to claim 4,

wherein the optical fiber has a dispersion value of 0.3 to 2.4 ps/nm-km at 1460 nm.

33. (new) The single-mode optical fiber according to claim 5,

wherein the optical fiber has a dispersion value of 0.3 to 2.4 ps/nm-km at 1460 nm.

34. (new) The single-mode optical fiber according to claim 4,

wherein the optical fiber has a dispersion value of 3.2 to 5.2 ps/nm-km at 1550 nm.

35. (new) The single-mode optical fiber according to claim 5,

wherein the optical fiber has a dispersion value of 3.2 to 5.2 ps/nm-km at 1550 nm.

36. (new) The single-mode optical fiber according to claim 4,

wherein the optical fiber has a dispersion value of 4.8 to 7.7 ps/nm-km at 1625 nm.

37. (new) The single-mode optical fiber according to claim 5,

wherein the optical fiber has a dispersion value of 4.8 to 7.7 ps/nm-km at 1625 nm.

38. (new) The single-mode optical fiber according to claim 36,

wherein a bending loss is 0.5dB or less at 1625 nm under the condition of a bending radius of 30mm, 100turns.

39. (new) The single-mode optical fiber according to claim 37,

wherein a bending loss is 0.5dB or less at 1625 nm under the condition of a bending radius of 30mm, 100turns.